

ABSTRACT OF THE DISCLOSURE

Process and device for depositing, by electron cyclotron resonance plasma, a web of carbon nanofibres or nanotubes, on a substrate without a catalyst, by injection of a microwave power into a deposition chamber including a magnetic structure with a highly unbalanced magnetic mirror and at least one electron cyclotron resonance zone within the interior of the deposition chamber itself and opposite the substrate. Under a pressure of less than  $10^{-4}$  mbar, ionization and/or dissociation of a gas containing carbon is induced in the magnetic mirror in the center of the deposition chamber, thus producing species that deposit on the substrate, which is heated. A resulting film, which may be on a substrate, can be formed from a web or a network of interconnected carbon nanofibres or nanotubes, like a spider's web, the film being exempt of a catalyst and a structure of several layers - a multi-layer structure - including at least two layers of a web of carbon nanofibres or nanotubes, as well as filters, electron accelerating or decelerating nanogrids and flat screens including such films or structures.